

Hand, Foot, & Mouth Disease

What is hand, foot, and mouth disease?

Hand, foot, and mouth disease (HFMD) is a common illness of infants and children. It is characterized by fever, sores in the mouth, and a rash with blisters. HFMD begins with a mild fever, poor appetite, malaise ("feeling sick"), and frequently a sore throat. One or 2 days after the fever begins, sores develop in the mouth. They begin as small red spots that blister and then often become ulcers. They are usually located on the tongue, gums, and inside of the cheeks. The skin rash develops over 1 to 2 days with flat or raised red spots, some with blisters. The rash does not itch, and it is usually located on the palms of the hands and soles of the feet. It may also appear on the buttocks. A person with HFMD may have only the rash or the mouth ulcers.

Is HFMD the same as foot-and-mouth disease?

No. HFMD is a different disease than foot-and-mouth disease of cattle, sheep, and swine. Although the names are similar, the two diseases are not related at all and are caused by different viruses.

What causes HFMD?

Several different viruses cause HFMD. The most common cause is coxsackievirus A16; sometimes, enterovirus 71 or other strains of enteroviruses cause HFMD. The enterovirus group includes polioviruses, coxsackieviruses, and echoviruses.

Is HFMD serious?

Usually not. HFMD caused by coxsackievirus A16 infection is a mild disease and nearly all patients recover without medical treatment in 7 to 10 days. There are no common complications. Rarely, this illness may be associated with "aseptic" or viral meningitis, in which the person has fever, headache, stiff neck, or back pain, and may need to be hospitalized for a few days. Another cause of HFMD, EV71 may also cause viral meningitis and, rarely, more serious diseases, such as encephalitis, or a poliomyelitis-like paralysis. EV71 encephalitis may be fatal. Cases of fatal encephalitis occurred during outbreaks of HFMD in Malaysia in 1997 and in Taiwan, 1998.

Is it contagious?

Yes, HFMD is moderately contagious. Infection is spread from person to person by direct contact with nose and throat discharges or the stool of infected persons. A person is most contagious during the first week of the illness. HFMD is not transmitted to or from pets or other animals.

How soon will someone become ill after getting infected?

The usual period from infection to onset of symptoms is 3 to 7 days. Fever is often the first symptom of HFMD.

Who is at risk for HFMD?

HFMD occurs mainly in children under 10 years old, but adults may also be at risk. Everyone is susceptible to infection. Infection results in immunity to the specific virus, but a second episode may occur following infection with a different member of the enterovirus group.

When and where does HFMD occur?

Individual cases and outbreaks of HFMD occur worldwide, more frequently in summer and early autumn. In the recent past, major outbreaks of HFMD attributable to enterovirus 71 have been reported in some South East Asian countries (Malaysia in 1997, Taiwan, 1998).

How is HFMD diagnosed?

HFMD is one of many infections that result in mouth sores. Another common cause is oral herpesvirus infection, which produces an inflammation of the mouth and gums (sometimes called stomatitis). Usually, the physician can distinguish between HFMD and other causes of mouth sores based on the age of the patient, the pattern of symptoms reported by the patient or parent, and the appearance of the rash and sores on examination. A throat swab or stool specimen may be sent to a laboratory to determine which enterovirus caused the illness. Since the testing often takes 2 to 4 weeks to obtain a final answer, the physician usually does not order these tests.

How is HFMD treated? Can it be prevented?

No specific treatment is available for this or other enterovirus infections. Symptomatic treatment is given to provide relief from fever, aches, or pain from the mouth ulcers. Preventive measures include frequent handwashing, especially after diaper changes; disinfection of contaminated surfaces by household cleaners (such as diluted bleach solution made by mixing 1 capful of household bleach containing chlorine with 1 gallon water), and washing soiled articles of clothing. Children are often excluded from child care programs, schools, or other group settings during the first few days of the illness. These measures may reduce the spread of infection, but they will not completely interrupt it.

For further information, please contact the Respiratory and Enteric Viruses Branch, National Center for Infectious Diseases, at 404-639-3607 (telephone) or 404-639-4960 (facsimile).

**National Center for Infectious Diseases
Centers for Disease Control and Prevention**
www.cdc.gov/ndidod/dvrd/hfmd.htm